

REMARKS

Claims 1 - 23 and 28 - 30 are pending in the present Application. Claims 22 and 23 have been withdrawn from consideration. Claim 15 has been amended to correct its dependency and therefore antecedent basis for "film layer", and Claim 31 has been added, leaving Claims 1-23 and 28-31 for consideration upon entry of the present Amendment. The Specification has been amended to correct certain typographical errors.

Support for new Claim 31 can at least be found in Paragraph [0016] as originally filed.

No new matter has been introduced by these amendments. Reconsideration and allowance of the claims are respectfully requested in view of the following remarks.

Information Disclosure Statement

It is noted that in the PTO Form 1449 filed on June 15, 2004, one of the references was considered but crossed out as it would not appear on a printed patent. The reference, U.S. Ser. No. 10/807,844 to Dunton et al. has issued as U.S. Patent No. 7,060,217, and as such, can and should be set forth on the printed patent. Applicants respectfully request that this reference be properly identified and cited on the front of any patent issuing on the present application. It is also noted that the International Search Report was considered, but also crossed out as it would not appear in the Notice of Cited References. Applicants respectfully request that it appear in the Notice of Cited References and note that such citations have appeared in other patents; see for example, U.S. Patent No. 7,175,086.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1, 7, 10 - 14, and 16 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over FR2840246A1 (FR '246). (Office Action dated 08/21/2007, hereinafter "OA 08/07", page 2) Applicants respectfully traverse this rejection.

The Office Action alleges that FR '246 teaches a process for forming an article substantially as claimed in Claims 1, 7, 10-14, and 16. (OA 08/07, page 2) With regard to Claims 13 and 14, it is alleged that FR '246 teaches thermoforming by a reduction of air pressure in the mold wherein "air" meets "a conformable pressure-transmitting medium." (*Id.*) Additionally, even though it is admitted that FR '246 does not specify that the resinous substrate to be heated is reinforced, it is noted that reinforcement is applied to the thermoplastic resinous substrate. (*Id.*) Therefore, it would allegedly have been obvious to one of ordinary skill in the art to add reinforcement to the resinous substrate before the initial thermoforming because FR '246 teaches that the reinforcement is capable of being thermoformed. (*Id.*) With regard to Claim 16, FR '246 allegedly teaches the resinous substrate can be a variety of polymer compositions, including polycarbonate. (*Id.*)

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art; that the prior art relied upon, or knowledge generally available in the art at the time of the invention, must provide some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). "A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007). To find obviousness, the Examiner must "identify a reason that would have prompted a person of ordinary skill in the art in the relevant field to combine the elements in the way the claimed new invention does." *Id.*

Applicants respectfully submit that one advantage of the present application is reduced volatile organic compound (VOC) emissions normally associated with the use of thermosetting resins, while FR '246 is directed to improving mechanical properties of the parts thermoformed by applying fiber reinforcement to the substrate **after** one surface has already been molded. (Abstract) With respect to Claim 1, Applicants respectfully submit

that the process as claimed in this application and the process in FR '246 are substantially different. The process in FR '246 contains steps such as heating a thermoplastic panel, thermoforming a first surface of the panel, applying pre-heated reinforcement to the other surface, applying an opposite mold to the reinforcement, and welding it to the thermoformed molding. (Abstract) Conversely, Applicants' process, calls for

heating a reinforced resinous substrate to a thermoforming temperature to form a heated substrate;

contacting a surface of the heated substrate with a surface of shaped surface component, wherein the heated substrate has a sufficient concentration of heated resin at the surface thereof for bonding the heated substrate to the shaped surface component; and

thermoforming the heated substrate at a pressure less than or equal to about 500 psi (3447 kPa) to provide a bond at an interface between the surface of the thermoformed substrate and the surface of the shaped surface component.

(Claim 1) The process in FR '246 at least fails to disclose "a reinforced resinous substrate" heated to a thermoforming temperature and also fails to disclose "thermoforming...at a pressure less than or equal to about 500 psi (3447 kPa)." (Claim 1) In fact, FR '246 discloses problems when using reinforce resinous substrates. (Page 1 of 4) As a result, FR '246, at best, teaches away from the present process. For example, FR '246, in their process is trying to overcome the problem of surface blemishes occurring during thermoforming with fiber-reinforced thermoplastics. (*Id.*) FR '246 discloses the use of fiber-reinforced thermoplastics during thermoforming also obstructs the stretching of the thermoplastic matter during thermoforming. (*Id.*) FR '246 also discloses that if fiber reinforced thermoplastics are used, higher pressures and temperatures must be utilized. (Detailed Description) As a result, there was no suggestion, prompting, or motivation, to change the process of FR '246 to use a reinforced resinous substrate as is suggested in the OA 08/07. If there is any prompting, it is to avoid the use of a resinous substrate.

Since, in the present application, a reinforced resinous substrate is used and thermoforming is achieved with "pressure[s] less than or equal to about 500 psi (3667

kPa)”, FR ‘246 fails to render the present claims obvious. Furthermore, the dependent claims add patentable distinction. For example, especially considering that FR ‘246 teaches the need for increased temperatures and pressures as a problem with respect to reinforced resinous substrates, thermoforming at a pressure of about 1 psi to about 500 psi (Claim 11), and even about 10 psi to about 100 psi (Claim 12), are not obvious.

Accordingly, for at least these reasons, Applicants therefore respectfully request reconsideration and withdrawal of this rejection.

Claims 2 – 6, and 15 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over FR ‘246 as applied to claims above, and further in view of U.S. Publication No. 2002/0182352 A1 to Mitten et al. (Mitten). Applicants respectfully traverse this rejection.

The Office Action admits FR ‘246 does not mention the use of tie layers, additional film layers, compatible layers, or balance layers but alleges Mitten teaches that it is well known to form multilayer shaped laminates by thermoforming laminate films with two or more layers and at least one bond-promoting tie layer selected because the tie layers improve adhesion. (OA 08/07, page 3) The Office Action alleges further that Mitten also teaches thermoforming the tie layers and concludes that it would have been obvious to one of ordinary skill in the art to form additional film layers and tie layers as allegedly taught by Mitten for the thermoforming process taught by FR ‘246 because Mitten teaches the layers are selected to improve adhesion and bonding with a superior and economical formed product. (*Id.*)

Applicants respectfully disagree and submit that Mitten teaches injection molding a commodity plastic resin onto a thermoformed shell and optionally using tie layers to promote adhesion. (Paragraph [0040])

FR ‘246 is directed to a process for creating a thermoformed substrate wherein fiber reinforcement is added during thermoforming to increase mechanical properties of

the part obtained. (Abstract and Detailed Description) FR '246 does not discuss injection molding part of the substrate or using tie layers. (Abstract)

It is first noted that Mitten fails to cure the deficiencies of FR '246 discussed above. Furthermore, there is no motivation to modify FR '246 based upon teachings relating to injection molding onto a thermoformed shell. If OA 08/07 is suggesting to extract merely the tie layer of Mitten and use it in the system of FR '246, there is no prompting or motivation to make such a modification and, even if there is such a modification, the combination fails to render the present claims obvious as discussed above.

Since there was no motivation, suggestion, or prompting to combine the use of tie layers in the combined process of Mitten with the thermoforming process in FR '246, and since Mitten fails to cure the deficiencies of FR '246, these references fail to render the present application obvious. Accordingly, for at least these reasons, Applicants therefore respectfully request reconsideration and withdrawal of this rejection.

Claims 2 – 6, 8, 9, 15 – 21, and 28 – 30 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over FR '246 as applied to claims above, and further in view of U.S. Patent No. 5,026,448 to Reafler et al. (Reafler). (OA 08/07, page 3) Applicants respectfully traverse this rejection.

The Office Action admits that FR '246 does not mention the use of tie layers, additional film layers, compatible layers, or balance layers but alleges that Reafler teaches it is well known in the art to form multilayer shaped laminates by thermoforming laminate films with two or more layers and at least one bond-promoting tie layer selected because the tie layers improve adhesion. (OA 08/07, page 3) It is further alleged that Reafler also teaches thermoforming the layers and, therefore, OA 08/07 concludes that it would have been obvious to one of ordinary skill in the art to form additional film layers and tie layers as taught by Reafler, for the thermoforming process taught by FR '246

because Reafler allegedly teaches the layers are selected to improve adhesion and bonding. (OA 08/07, page 3-4)

Firstly, as with Mitten, Reafler fails to cure the deficiencies of FR '246. Furthermore, there is no motivation, prompting, or suggestion to modify the process of FR '246 to include a bond promoting layer. FR '246 is applying a reinforcement to a thermoplastic panel. OA 08/07 alleges that it would have been obvious to include a tie layer in the process of FR '246 but does not elaborate on how and where the tie layer would be used. There is no support for such a modification, and if the modification is between the reinforcement and the thermoplastic panel, as described above, the present application is directed to a reinforced resinous substrate. Hence, even the modification would not meet the present claims. The mere existence of elements of the present claims in various applications does not render the present claims obvious. The claims must be read as a whole and there must be prompting to modify or combine prior art references to attain the present claims. Since no such prompting exists, and since the references fail to cure the deficiencies of FR '246, the present claims are non-obvious.

With respect to Claim 15, the Office Action alleges it would have been obvious to one of ordinary skill in the art to apply a layer to the substrate opposite the side of the film layer to form a protective surface on the substrate. (OA 08/07, page 4) It is noted, however, Applicants do not claim a "layer" but claim a "balancing layer". It is not even alleged that Reafler teach a balancing layer.

With respect to Claims 8 and 9, the Office Action alleges it would have been obvious to one of ordinary skill in the art to thermoform a preformed layer by either not removing it from the mold or by placing it in a second thermoforming mold and further thermoforming the compatible layers because Reafler teaches that sequential thermoforming improves the desirable surface qualities when such materials are stretched by thermoforming and bonding to a substrate. (OA 08/07, page 4) However, what Reafler states is:

The present invention provides an improvement in the use of protective and decorative sheet materials intended for thermoforming bonding to three-dimensional substrates such as exterior or interior automobile parts, appliances, and the like. The improvement reduces the potential for loss of desirable surface qualities when such materials are stretched by thermoforming and bonded to a substrate. It also offers advantages with respect to a wider selection of clearcoat materials and to the covering of highly contoured substrate surfaces, as will be further described.

More specifically, this invention relates to a method of forming a glossy protective and decorative basecoat-clearcoat surface on a three-dimensional substrate which comprises

heating, stretching and bonding a thermoplastic basecoat sheet to the substrate,

heating a thermoplastic clearcoat sheet, and

stretching and bonding the heated clearcoat sheet to the basecoat sheet on the substrate.

(Col. 2, lines 25 – 45) Reafler does not disclose or suggest the process of: “the thermoformed surface component is cooled in the mold, then contacted with the heated substrate without removal from the mold” (Claim 8), or

removing the thermoformed surface component from the mold, and placing the thermoformed surface component in or on a second mold prior to contacting with the heated substrate.

(Claim 9) There is no support for the contention in OA 08/07.

With respect to Claims 20 and 21, the Office Action alleges it would have been obvious to one of ordinary skill in the art to thermoform a preformed layer and separately thermoform the compatible substrate layer, and further thermoform or adhesively bond together because Reafler teaches that sequential thermoforming in separate steps improves the desirable surface qualities when such materials are stretched by thermoforming and bonded to a substrate. (OA 08/07, page 4)

Applicants note that Reafler disclose a particular process and advantages associated with that particular process. They do not disclose or suggest the extensions

alleged in OA 08/07. The elements of Claims 20 and 21, as well as the other dependent claims, are not known or obvious. If official notice is being taken, written support for such notice is respectfully requested.

The process in Reafler does not include thermoforming a preformed layer, separately thermoforming the compatible substrate layer, and then thermoforming or adhesively bonding the two layers together. Instead, Reafler teaches that a thermoplastic sheet is bonded to the substrate and to the combination a clearcoat sheet is then added. (Column 13, lines 28-40)

Reafler fails to cure the deficiencies of FR '246. Accordingly, for at least the above reasons, Applicants therefore respectfully request reconsideration and withdrawal of this rejection.

With respect to Claims 16-19, and 28-30, the Office Action admits that FR '246 does not disclose that the surface component comprises an arylate polyester or the polymers mentioned in Claim 30 and does not include a compatible layer with an additive for an aesthetic effect but alleges that Reafler teaches a paint coated basecoat sheet (which qualifies as that layer) bonded to a carrier film and bonded to a substrate by thermoforming with the clearcoat sheet and optional tie layers to improve bonding of the paint layer to the carrier film. (OA 08/07, page 4-5) The Office Action alleges further that Reafler teaches the clearcoat sheet, including the surface component, can be made from the polymers listed in Claims 28-30. (OA 08/07, page 5) The Office Action concludes it would have been obvious to one of ordinary skill in the art to use the composition of surface component, added tie layers, and compatible layers as taught by Reafler with the thermoforming taught by FR '246 because Reafler allegedly teaches that the polymers form films that will stretch when heated during the thermoforming process and provide a smooth, glossy topcoat and because Reafler allegedly teaches that the tie layer improves bonding. (*Id.*)

Applicants respectfully disagree and submit that the Examiner has not provided any motivation, prompting, or suggestion to combine the thermoforming process taught

by FR '246 with the use of basecoat and clearcoat layers taught by Reafler. No *prima facie* case of obviousness has been established. There is no mention in FR '246 of bonding, or of additional layers. What is disclosed in FR '246 is reinforcement from a thermoplastic sheet made of two layers of parallel reinforcing fibers and this reinforcement is applied to a second surface after the first surface has been heated for thermoforming. (Abstract) There is no motivation or suggestion to combine the references in the manner suggested by the Office Action. Additionally, as noted above, Reafler fails to cure the deficiencies of FR '246 described in detail above. Accordingly, for at least these reasons, Applicants therefore respectfully request reconsideration and withdrawal of this rejection.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and withdrawal of the rejection(s) and allowance of the case are respectfully requested.


If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 50-3622.

Respectfully submitted,

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